

Introduction to Equations

Example:

A car manufacture can produce car parts at a rate of 13 parts every hour. To fulfill the demand for the vehicles, the manufacture needs to produce 8,125 parts. The company wants to know how long the job will take.

Hours	Expression Rule	Car Parts Produced
1		
2		
h		
?		8,125

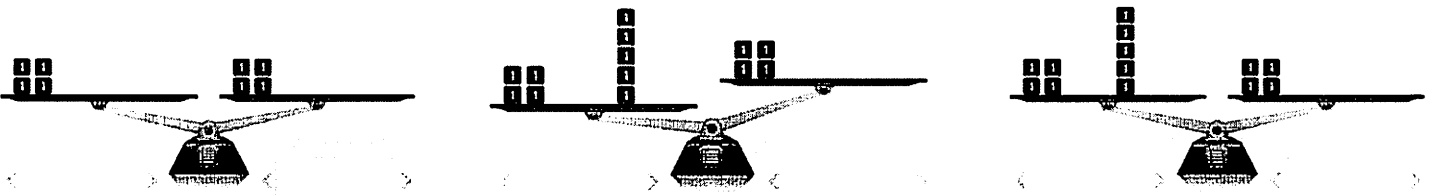
The Equation we solve for h to determine the number of ours needed for the job.

The Goal in Solving Equations:

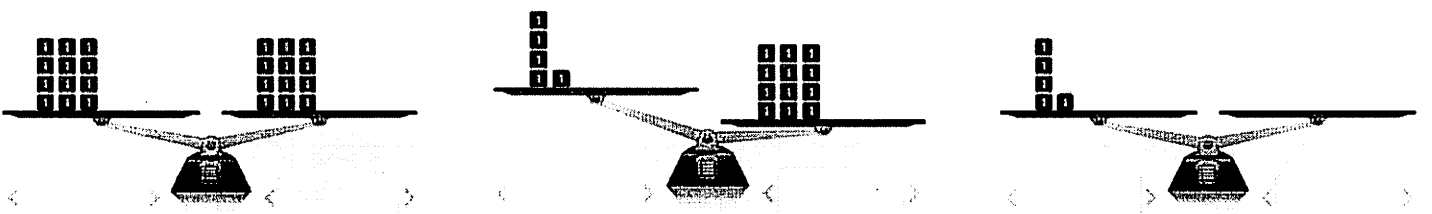
Figure out what the variable equals by getting the variable by itself.

In order to do this we need to think of an equation like it's a balance.

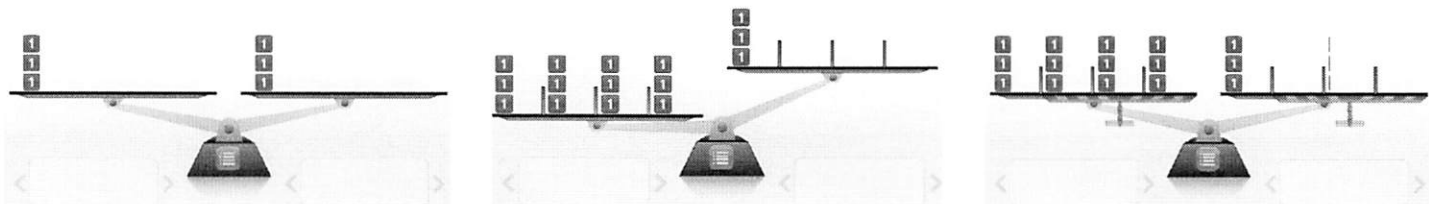
What will it take to balance the Scales?



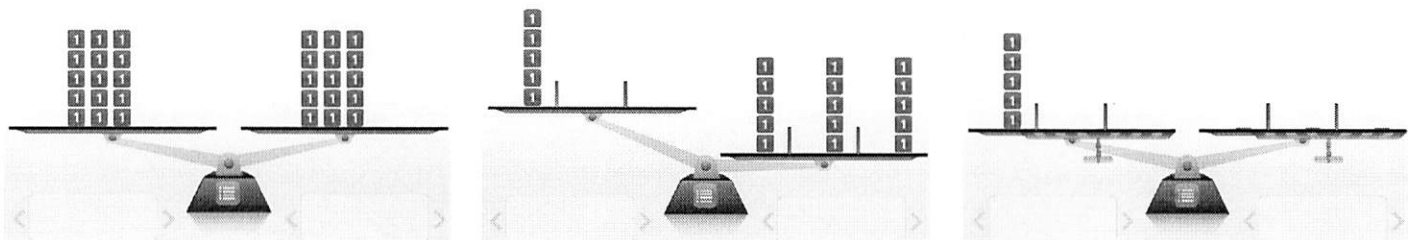
Balance the Scale (Equation): If we ADD 5 blocks to one side we must _____



Balance the Scale (Equation): If we SUBTRACT 7 blocks to one side we must _____

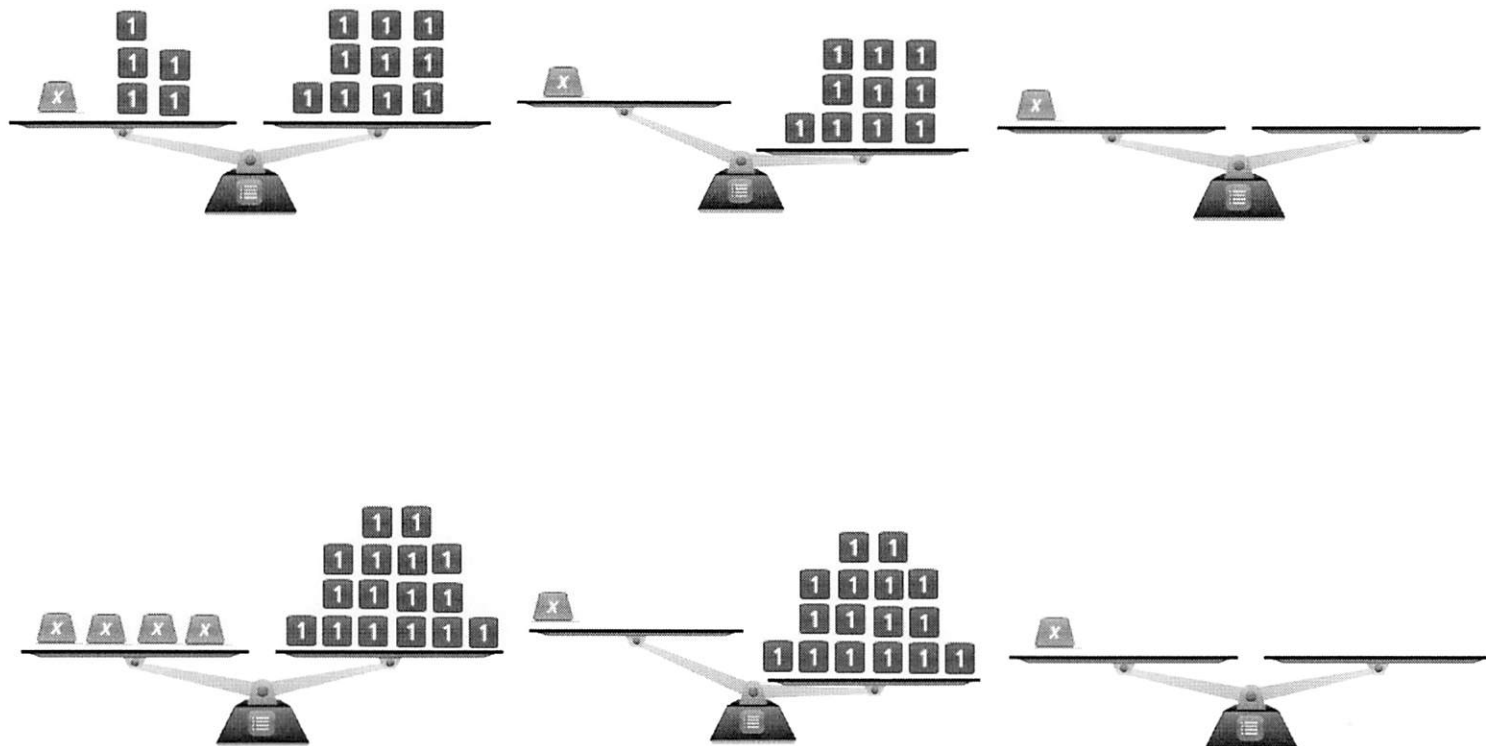


Balance the Scale (Equation): If we MULTIPLY by 4 one side we must _____



Balance the Scale (Equation): If we DIVIDE by 3 one side we must _____

So how does this idea help us solve equations...



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Example:

car manufacture can produce car parts at a rate of 13 parts every hour. To fulfill the demand for the vehicles, the manufacture needs to produce 8,125 parts. The company wants to know how long the job will take.

Hours	Expression Rule	Car Parts Produced
1	$13 \cdot 1$	13
2	$13 \cdot 2$	26
h	$13 \cdot h$	
?	$13 \cdot h = 8,125$	

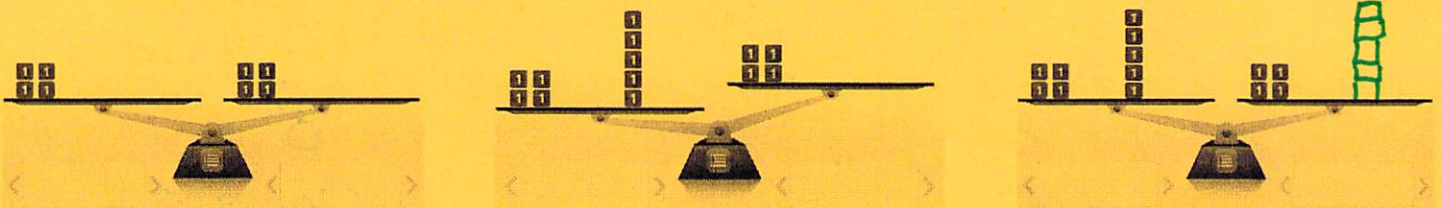
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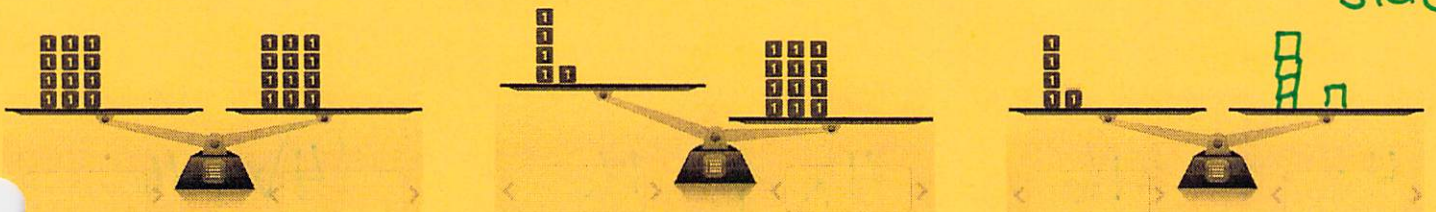
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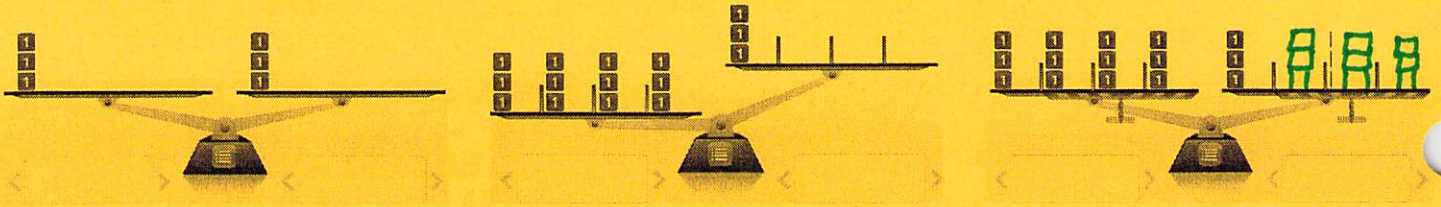
What will it take to balance the Scales?



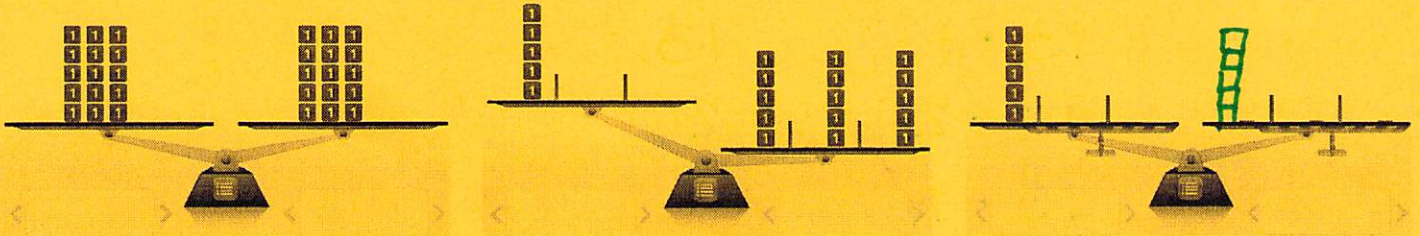
Balance the Scale (Equation): If we ADD 5 blocks to one side we must + 5 to the other side



Balance the Scale (Equation): If we SUBTRACT 7 blocks to one side we must - 7 from the other side

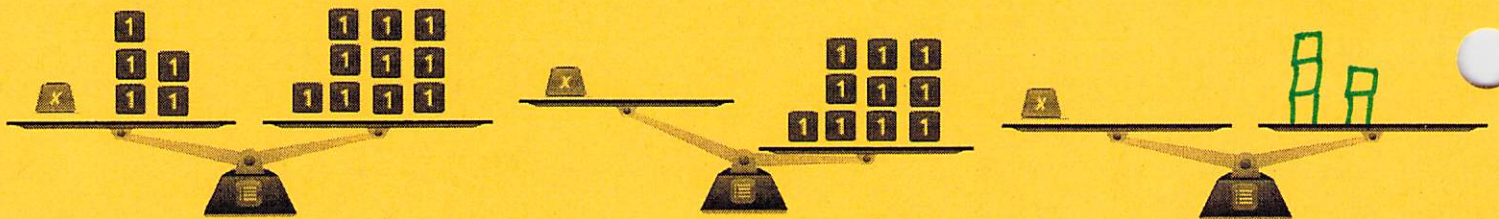


Balance the Scale (Equation): If we MULTIPLY by 4 one side we must $\cdot 4$ on the other side



Balance the Scale (Equation): If we DIVIDE by 3 one side we must $\div 3$ on the other side

So how does this idea help us solve equations...



$$x + 5 = 10$$

$$x + 5 = 10$$

$$-5 \quad |$$

$$x + 5 = 10$$

$$\begin{array}{r} \textcircled{+5} \\ -5 \\ \hline 0 \end{array} \quad | \quad -5$$

$$\textcircled{x = 5}$$



$$4x = 16$$

$$4x = 16$$

$$\div 4 \quad |$$

$$\textcircled{4}x = 16$$

$$\begin{array}{r} \textcircled{\div 4} \\ \div 4 \end{array} \quad | \quad \div 4$$

$$\textcircled{1x = 4}$$